

Study of the immunomodulating properties of drugs in a lipopolysaccharide-inflammation model in calves

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Objectives

Lipopolysaccharide (LPS) has been widely applied in research as a model of immune challenge in calves. The exogenous administration of LPS induces the release of pro-inflammatory cytokines, such as tumor necrosis factor- α (TNF- α), interleukin-1 β (IL-1 β) and IL-6. These cytokines trigger and modulate the acute phase response, a reaction which initiates fever and stimulates the hepatic synthesis of acute phase proteins like serum amyloid A and haptoglobin. Since some drugs have been reported to possess immunomodulating properties in calves, the aim of this research is to study the role of drugs such as antibiotics, SAIDs and NSAIDs in our standardized LPS-inflammation model. Gamithromycin, a novel azalide, has been selected as a first drug of interest, as the immunomodulating activities of macrolides have been confirmed frequently. Dexamethasone has been applied as a positive control. Furthermore, the combination of both drugs was studied for possible additive and/or synergistic effects.

Materials and Methods

Eighteen calves were randomly divided in three groups, each group consisting of six calves. The groups received respectively gamithromycin s.c., dexamethasone i.m. and the combination of both drugs. At T_{max} of the drug (time at which the maximum plasma concentration is reached), the calves were challenged intravenously with LPS. Rectal body temperature was measured and blood samples were collected regularly until 72h p.a. Plasma samples were analyzed for cytokines and acute phase proteins using ELISAs.

Results and Conclusions

The results of this experiment will be compared to the results previously obtained in calves (n=6) that were administered a single LPS-bolus (LPS-model) and will be presented at the congress.